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**Declaration under Rule 4.17:**

— of inventorship (Rule 4.17(iv)) for US only

**Published:**

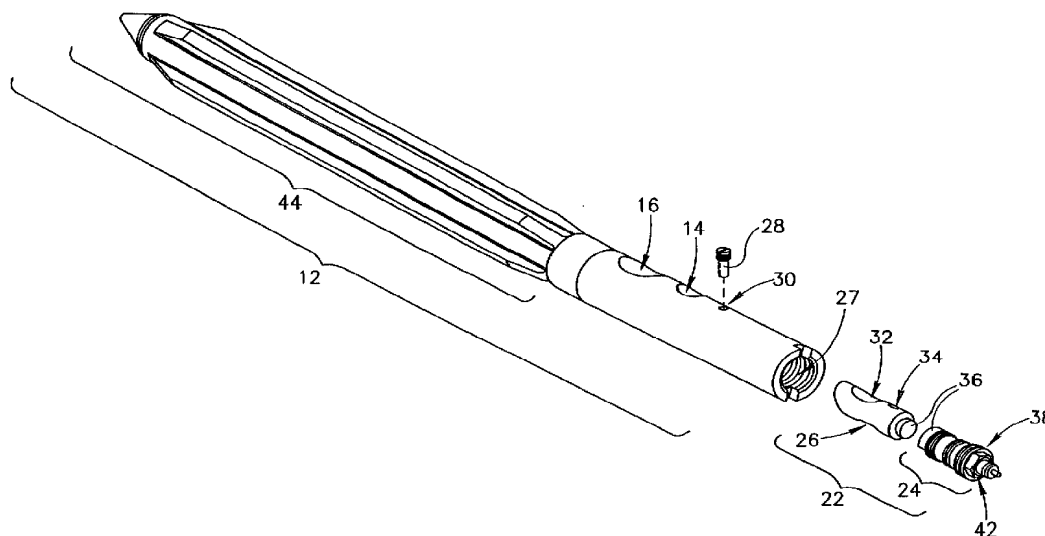
— with international search report

(88) Date of publication of the international search report:

4 December 2003

[Continued on next page]

(54) Title: LOCKING MECHANISM FOR INTRAMEDULLARY NAILS



(57) Abstract: Intramedullary nail apparatus comprising: an intramedullary nail (12) having an axis, a proximal end, a distal end, a first hole (16) going through the nail at an angle to the axis, and a second hole (14) going through said nail at the same or a different angle to the axis, with the second hole closer to the proximal end than the first hole; a first screw (10) which goes through the first hole; a second screw (25) which goes through the second hole; and a locking mechanism (22), accessible from the proximal end of the nail, operative to selectively lock in place the first screw. The apparatus may include a channel (48, 52) for the passage of fluid which causes a portion (44) of the apparatus to expand radially thereby locking it in place or which cements it in place.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL 03/00052

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B17/74

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 76414 A (ORTHODYNE) 21 December 2000 (2000-12-21)  page 27, line 10 - line 31; figures 13,14 page 25, line 3 - line 9 page 26, line 1 - line 5 -----	1-3, 6-15,36, 37
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 15, 6 April 2001 (2001-04-06) -& JP 2000 342596 A (HOMUZU GIKEN:KK), 12 December 2000 (2000-12-12) abstract; figures 2,3,5 -----	1,6,36, 37
X	EP 0 838 199 A (HIT MEDICA) 29 April 1998 (1998-04-29) abstract; figure -----  -/-	1,6,36, 37

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

15 May 2003

Date of mailing of the international search report

13. 08. 2003

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## INTERNATIONAL SEARCH REPORT

Intern I Application No  
PCT/IL 03/00052

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 199 60 507 A (W.MITTELMEIER) 21 June 2001 (2001-06-21) column 6, line 35 - line 58; figures 2,4,5A	1-3,6-8, 36,37
P,X	----- EP 1 175 872 A (KOI) 30 January 2002 (2002-01-30) figures -----	1,6-15, 36,37

# INTERNATIONAL SEARCH REPORT

ational application No.  
PCT/IL 03/00052

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 38  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-15,36,37

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Claims Nos.: 38

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15,36-37

Intramedullary nail with locking mechanism allowing screws to be locked independently of each other.

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2. claims: 16-29

Intramedullary nail with channel adapted for passage of fluid.

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3. claims: 30-35

Intramedullary nail with locking mechanism prevented from separating from the nail by a motion limiting element.

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## INTERNATIONAL SEARCH REPORT

Inte Application No  
PCT/IL 03/00052

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